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UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF BIOLOGICAL SURVEY  
and  
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DIRECTIONS FOR USING CRUDE CALCIUM CYANIDE TO DESTROY DIGGER  
GROUND SQUIRRELS IN CALIFORNIA\*

Cyanide Products Suitable for Fumigating Burrows

Dry preparations of crude calcium cyanide that contain 15 to 25 per cent of hydrocyanic acid, which is liberated as a gas on exposure to the moisture of the air or soil, have been tested extensively to determine the form and conditions under which their use is effective in destroying ground squirrels in California. Calcium cyanide in flake form has shown relatively low effectiveness in this State because of its slowness in liberating the gas under dry atmospheric and ground conditions and because of the extensive ramifications of the burrows of ground squirrels and the period of inactivity of the animals. The application of calcium cyanide in the dust and granular forms is satisfactory and economical only under suitable conditions. Before extensive use is made of the materials on any ranch it is recommended that a small area typical of the whole be treated and checked for two weeks to determine the effectiveness of the commercial material under the particular local conditions.

Conditions Essential for Successful Use

A form of cyanide is required that will liberate its gaseous content fairly quickly and in sufficient volume to fill the rodent burrow with a killing concentration in a short time. Considerable moisture in the air and soil, but not too much, is essential to successful work. Cyanide products are more effective in compact soils than in loose sandy soils, volcanic ash, or lime formations. They may be used to advantage in orchards, as a supplement to strychnine-poisoned baits in completing rodent eradication, during seasons when fumigants are more effective than poisoned baits and in localities where these might endanger poultry or domestic stock.

Methods of Application

Dust.--To apply the cyanide dust, use a portable dusting machine provided with a 6-foot hose and capable of forcing out the dust under sufficient pressure to fill the burrow system. Insert the end of the hose well into the burrow and tamp loose dirt about it to prevent dust from escaping.

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\*These directions are issued with the understanding that they can not be generally recommended under present methods of application because of the great variation of soil conditions, of burrows, and of activity of digger ground squirrels in California, upon all of which the successful use of cyanide depends. The individual user will have to determine the efficiency of the recommendations for his local conditions. The hydrocyanic-acid gas will kill ground squirrels if it reaches them in sufficient concentration.

Give the number of strokes of the duster required to force at least two ounces of the cyanide dust into the burrow. In squirrel systems having a number of exits, a quantity equal to at least 1 ounce for each exit should be used. It is well also to apply the material at two or more of these exits instead of using all of the required quantity at one.

Granular form.--Two ounces of calcium cyanide in the granular form should be placed well down into each occupied burrow with a long-handled mixing spoon. Do not place it in a pile but spread it out well. After this is applied, the mouth of the burrow should be closed with earth or other material in such a manner that the cyanide will not be covered. The holes may be left open under favorable conditions, but investigations indicate that less variable results are obtained when they are closed.

Follow-up work.--Following the first treatment with either form of the poison the area covered should be inspected once a week and any opened holes retreated with a heavier dose than the first. Any holes missed the first time should be treated.

### C A U T I O N

Crude calcium cyanide and the gases arising from it are deadly poisons. It should be kept closed air-tight in the original container and be transferred to the duster or a bucket fitted with a tight lid only in the open air when ready to use. Read and follow precautions on the label of the original container.

Keep poison container out of reach of children, irresponsible persons, and livestock, and use the poison only where persons or livestock will not be endangered.

In using crude calcium cyanide in any form the operator should stand on the windward side so as to avoid the dust or gas. He should not breathe the fumes. Wash the hands at once after working with cyanide and do not get any of the material in the mouth.

Antidotes.--Inhale ammonia; apply cold water to the head and spine; give as a stimulant 1 teaspoonful of aromatic spirits of ammonia; administer artificial respiration.